APPENDIX C

Laboratory Results Report

Air Resources Board

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DATE: September 10, 2007

SUBJECT: ACROLEIN APPLICATION STUDY RESULTS

Attached are the acrolein analytical results for the Berenda Mesa Canal Acrolein Application Study. Twenty-five (25) samples, including trip blanks, trip spikes, and collocated samples, were received and analyzed per MLD Method 066 standard operating procedure. There were no deviations from the method and all quality control samples met method criteria.

The Standard Operating Procedure for the Determination of Oxygenates and Nitriles in Ambient Air by Capillary Column Gas Chromatography/Mass Spectrometry (MLD Method 066) may be found at http:/www.arb.ca.gov/aaqm/sop/sop_066.pdf.

If you have any questions or require additional information please contact me at (916) 445-9483.

Acrolein Application Study at Berenda Mesa Canal
July 2007

Field Log #	Barcode	LIMS Sample ID	Sample Name	Sampling Date	Receipt Date	Analysis Date	P (in Hg) upon receipt	P (psi) dilution	Acrolein raw data, ppb	Dilution Factor	**Acrolein Conc.(ppb)	Adjusted LOD (ppb)
001E	TX008203	200307149	0E-B	7/24/2007	7/26/2007	7/30/2007	-10.0	11.0	0.368	2.6	1.0	0.8
002E	TX008204	200307150	0E-FS	7/24/2007	7/26/2007	7/30/2007	-4.5	14.2	3.635	3.0	10.9	0.9
003E	TX008201	200307147	Trip Spike	7/24/2007	7/26/2007	7/30/2007	-19.0	10.0	3.627	3.0	10.9	0.9
004E	TX008210	200307156	0E	7/25/2007	7/26/2007	8/2/2007	-10.0	10.0	0.675	2.5	1.7	0.8
005E	TX008215	200307161	0E-C	7/25/2007	7/26/2007	8/2/2007	-10.0	11.0	0.836	2.6	2.2	0.8
006E	TX008211	200307157	0.3E	7/25/2007	7/26/2007	8/2/2007	-10.0	11.0	1.271	2.6	3.3	0.8
007E	TX008212	200307158	0.3E-L	7/25/2007	7/26/2007	8/2/2007	-10.0	10.5	1.121	2.6	2.9	0.8
008E	TX008213	200307159	0.7E	7/25/2007	7/26/2007	8/2/2007	-10.0	10.2	1.919	2.5	4.9	0.8
009E	TX008214	200307160	1.0E	7/25/2007	7/26/2007	8/2/2007	-9.0	10.0	1.198	2.4	2.9	0.7
001W	TX008202	200307148	0W-B	7/24/2007	7/26/2007	7/30/2007	-10.0	10.0	0.799	2.5	2.0	0.8
002W	TX008200	200307146	Trip Blank	7/24/2007	7/26/2007	7/30/2007	-30.0	10.0	<0.3	1.0	<0.3	0.3
003W	TX008205	200307151	0W	7/25/2007	7/26/2007	7/30/2007	-10.0	11.0	2.205	2.6	5.8	0.8
004W	TX008206	200307152	0.3W	7/25/2007	7/26/2007	7/30/2007	-10.0	10.0	2.422	2.5	6.1	0.8
005W	TX008207	200307153	0.3W-L	7/25/2007	7/26/2007	7/30/2007	-10.0	10.0	2.886	2.5	7.3	0.8
006W	TX008208	200307154	0.7W	7/25/2007	7/26/2007	7/30/2007	-9.8	11.0	2.175	2.6	5.7	0.8
007W	TX008209	200307155	IW	7/25/2007	7/26/2007	7/30/2007	-9.5	11.2	1.589	2.6	4.1	0.8
010E	TX008220	200307166	3.5E	7/25/2007	7/26/2007	8/6/2007	-10.0	11.0	0.849	2.6	2.2	0.8
011E	TX008224	200307170	3.5E-C	7/25/2007	7/26/2007	8/6/2007	-10.0	10.6	0.666	2.6	1.7	0.8
012E	TX008221	200307167	3.8E	7/25/2007	7/26/2007	8/6/2007	-8.5	10.1	1.621	2.4	3.8	0.7
013E	TX008222	200307168	4.2E	7/25/2007	7/26/2007	8/6/2007	-9.0	10.8	1.961	2.5	4.9	0.7
014E	TX008223	200307169	4.5E	7/25/2007	7/26/2007	8/6/2007	-10.0	10.0	0.799	2.5	2.0	0.8
010W	TX008216	200307162	3.5W	7/25/2007	7/26/2007	8/2/2007	-9.0	10.2	2.817	2.4	6.8	0.7
011W	TX008217	200307163	3.8W	7/25/2007	7/26/2007	8/2/2007	-9.0	11.0	1.908	2.5	4.8	0.8
012W	TX008218	200307164	4.2W	7/25/2007	7/26/2007	8/6/2007	-10.0	9.7	1.961	2.5	4.9	0.7
013W	TX008219	200307165	4.5W	7/25/2007	7/26/2007	8/6/2007	-9.0	10.8	1.365	2.5	3.4	0.7

** Acrolein conc. (final) = acrolein raw data * dilution factor

Acrolein Application Study at Berenda Mesa Canal
Quality Control Results
AMENDED

Laboratory System Blanks
LOD = 0.3 ppb
blank criteria limit = 0.6 ppb

Analysis Date	Acrolein Concentration (ppb)
7/30/2007	<0.3
8/2/2007	<0.3
8/6/2007	<0.3

Laboratory Control Samples
UCL = 1.95 LCL= 1.06

Analysis Date	Acrolein Concentration (ppb)
7/30/2007	1.63
8/2/2007	1.85
8/6/2007	1.67

Laboratory Duplicate Analyses
Criteria : +/- 30% for samples with concentrations greater than 5xLOD

Field Log #	Sample Name	Analysis Date	Acrolein Primary Result (ppb)	Acrolein Duplicate Result (ppb)	Relative Percent Difference
007W	IW	7/30/2007	1.59	1.63	2.4
009E	1.0E	8/2/2007	1.20	1.27	5.8
011E	3.5E-C	8/6/2007	0.67	0.61	9.3

Collocated Sample Results

Field Log #	Sample Name	Acrolein Concentration (ppb)		Relative Percent Difference
		Primary Sampler	Collocated Sampler	
004E and 005E	OE	1.7	2.2	25.6
010E and 011E	3.5E	2.2	1.7	25.6

Field Log #	Sample Name	Acrolein Concentration (ppb)			Percent Recovery*
		Theoretical	Analytical	Background	
003E	Trip Spike	10.8	10.9	1.0	91.7
002E	0E-FS	10.7	10.9	1.0	92.5

*Analytical concentration - background concentration / theoretical concentration * 100

Acrolein Application Study at Berenda Mesa Canal
TRIP and FIELD SPIKES
AMENDED

Canisters TX008201 & TX008204 were humidified and spiked with acrolein gas prior to being taken to the field.

TX008201 (Field Log # 003E Sample Name Trip Spike): 5.6 psig of acrolein gas, 54.7 ppb from cylinder AAL069919, was transferred to the evacuated humidified canister (-30"Hg). Canister pressure reading after transfer was -20 in Hg which is the equivalent of 4.9 psia of acrolein (10" Hg * 1 atm / 30"Hg = 0.333 atm. 0.333 atm * 14.7 psia / 1 atm = 4.9 psia).

TX008204 (Field Log # 002E Sample Name 0E-FS): 5.1 psig of acrolein gas, 54.7 ppb from cylinder AAL069919, was transferred to the evacuated humidified canister (-30"Hg). Canister pressure reading after transfer was -18.5 in Hg which is the equivalent of 5.6 psia of acrolein (11.5" Hg * 1 atm / 30" Hg = 0.383 atm. 0.383 atm * 14.7 psia / 1 atm = 5.6 psia).

Both canisters were brought to the field and back to the lab where they were pressurized as follows:

TX008201 was received in the lab at -19.0"Hg, pressurized to 10.0 psi with ultra pure N2, equilibrated and analyzed by method MLD066. Theoretical spiked concentration level was estimated to be 10.8 ppb. The analysis value was 10.9 ppb. Calculated percent recovery was 101 percent. Subtracting the background concentration results in recovery of 91.7%.

TX008204 was received in the lab at -4.5"Hg, and was pressurized the same way as TX008201 to 14.2 psi. Theoretical spiked concentration level was estimated to be 10.7 ppb. The analysis value was 10.9 ppb. Calculated percent recovery was 102 percent. Subtracting the background concentration results in recovery of 92.5%.

Calculations: For TX008201 Field Log # 003E Trip Spike and
TX008204 Field Log # 002E Sample Name 0E-FS

TX008201
Stock acrolein conc is 54.7 ppb
psig +14.7=psia
1 atm = 14.7psia
6 liters = canister volume at 1 atm
10.0 psig +14.7 =24.7 psia
24.7 psia = 1.68 atm
Canister pressure reading after transferring 54.7 ppb acrolein was -20 in Hg.
30 in Hg = 1atm

Pressure in canister = 30 in Hg - 20 in Hg = 10 in Hg
V1 = 10 in Hg / 30 in Hg/atm * 6.0 li/atm
= 2.0 li

V2 = 24.7 psia * 1 atm/14.7 psia * 6.0 li/atm
= 10.1 li

Dilution Factor = V2/V1
= 10.1 / 2.0 = 5.05

Therefore, expected acrolein conc. in canister is 54.7 ppb/5.05 = 10.8 ppb
Per cent recovery = analysis result *analytical dilution factor / expected result *100
Per cent recovery = 10.9 ppb / 10.8 ppb *100 = 101

Field spike recovery of TX008201 =
TX008201 concentration - background concentration TX008203 / theoretical concentration *100
= 10.9 - 1/10.8 * 100 = 91.7%

TX008204
Stock acrolein conc is 54.7 ppb
psig +14.7=psia
1 atm = 14.7psia
6 liters = canister volume at 1 atm
14.2 psig +14.7 =28.9 psia
28.9 psia = 1.97 atm
Canister pressure reading after transferring 54.7 ppb acrolein was -18.5 in Hg.
30 in Hg = 1atm

Pressure in canister = 30 in Hg - 18.5 in Hg = 11.5 in Hg
V1 = 11.5 in Hg / 30 in Hg/atm * 6.0 li/atm
= 2.3 li

V2 = 28.9 psia * 1 atm/14.7 psia * 6.0 li/atm
= 11.8 li

Dilution Factor = V2/V1
= 11.8 / 2.3 = 5.13

Therefore, expected acrolein conc. in canister is 54.7 ppb/5.13 = 10.7 ppb
Per cent recovery = analysis result *analytical dilution factor / expected result *100
Per cent recovery = 10.9 ppb / 10.7 ppb *100 = 102

Field spike recovery of TX008204 =
TX008204 concentration - background concentration TX008203 / theoretical concentration *100
= 10.9 - 1/10.7 * 100 = 92.5%